



Date: 28-06-2022

Dept. No.

Max. : 100 Marks

Time: 01:00 PM - 04:00 PM

**PART-A**

**Answer all questions:**

**(10 × 2 = 20)**

1. Explain the use of the following built-in functions in MATLAB  
i) rand(1,n) ii) rand(m,n)
2. Write the syntax of the assignment operator.
3. Differentiate between the following output commands  
i) disp ii) fprintf
4. Write the commands that are used to generate output.
5. Write the MATLAB built function that is used to multiply and divide two polynomials.
6. Write the commands used to find the roots of a polynomial.
7. Write any four commands used for customizing plots.
8. Write the use of the comet function.
9. Write the commands to find the scalar and vector products of two vectors.
10. Write the command used to find the magnitude of the given vector.

**PART-B**

**Answer any 5 Questions**

**(5 × 8 = 40)**

11. a) i) Write the MATLAB command to create the following matrix

$$A = \begin{bmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 \\ 2 & 4 & 6 & 8 & 10 & 12 & 14 \\ 21 & 18 & 15 & 12 & 9 & 6 & 3 \\ 5 & 10 & 15 & 20 & 25 & 30 & 35 \end{bmatrix}$$

- ii) Write the MATLAB commands to create a  $3 \times 4$  matrix B from the 1<sup>st</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> rows and the 1<sup>st</sup>, 3<sup>rd</sup> through 5<sup>th</sup> and 7<sup>th</sup> column of the matrix A
- iii) Write the MATLAB commands to create a 15 elements-long row vector C from the elements of the third row, and the 5<sup>th</sup> and 7<sup>th</sup> columns of the matrix A.

- b) Write a script file that calculates the average points scored in five games

12. Write the use of the following commands, where A is an  $m \times n$  matrix.

i)  $A(:, n)$  ii)  $A(n, :)$  iii)  $A(:, m:n)$  iv)  $A(m:n, :)$  v)  $A(m:n, p:q)$  (1+1+2+2+2)

13. a). Explain the following built-in functions.

i) xor(a,b) ii) all(A) iii) any(A) iv) find(A)

(4 marks)

b). Explain any four 3D plot commands. ( 4 marks)

14. Explain the three different ways in which the values can be assigned to a variable in a script file in MATLAB.

15. Explain the following built-in functions.  
i) collect ii) expand iii) factor iv) subs

16. Explain the various mesh and surface plots with examples

17. Explain the various built-in functions that performs set operations on vectors in MATLAB

18. Write the MATLAB commands to do the following:

- i) Scalar triple product of three vectors
- ii) Vector triple product of three vectors
- iii) Derivative of a vector function

### PART-C

**Answer any 2 Questions**

**(2 × 20 = 40)**

19. a) Explain in detail the procedure to refer and modify the elements in a matrix for a  $5 \times 5$  matrix. (10 marks)

b). Write short note on variables and assignment operators with examples. (10 marks)

20. a) Explain the following statements by using flow chart diagrams and examples

- i) if-else-end structure
- ii) switch-case statement
- iii) for-end loop
- iv) while-end loop

21. a) Explain the following in MATLAB interface.

- i) Expressing a polynomial
- ii) Finding the value of a polynomial
- iii) Multiplying two polynomials
- iv) Dividing two polynomials

22. a) Write short note on symbolic mathematics and the various commands associated with them

( 10 marks)

b) Write the MATLAB commands to find the derivative of a vector valued function symbolically. ( 10 Marks )